U.S. Fish and Wildlife Service and the Penobscot River Restoration Project

Redesigning A River

The Penobscot River, New England's second largest river system, once flowed freely for more than 100 miles from Maine's North Woods to the sea. Over two centuries, more than 100 dams were built that crippled its course, obstructing the migratory paths of sea-run fish like Atlantic salmon, shad, eels and alewives and diminishing the water's health and food for wildlife upstream.

More than 10 years ago, federal and state agencies, the Penobscot Indian Nation, conservation groups, towns and dam owners decided to work together to revive the river, building a tremendous partnership and a grand plan. The removal of Great Works Dam in 2012 was the first major step in the restoration of the river. Demolishing the Veazie Dam in 2013 will reconnect nearly 1,000 miles of habitat in this river basin that totals 8,570 square miles.

The U.S. Fish and Wildlife Service is working closely with the Penobscot River Restoration Trust to remove these two dams, modify a third dam, and increase fish passage at four other dams. Energy production will be maintained through improvements to other dams upriver. Projections based on the Service's 2010 fisheries economic report indicate that the reconnection of the river's waters will bring more than $500 million in benefits to the local economy. The entire project, from the purchase of the dams by the Trust to the monitoring of wildlife benefits, is estimated to cost $63 million; funding is through private donors, non-governmental organizations, and federal and state agencies.

Bridget Besaw/Penobscot River Restoration Trust

Veazie Dam on the Penobscot River

Creatively conserving our resources

The Penobscot River Restoration Project provides a creative solution that balances how we use water - for nature and fisheries, and for energy and business. Considered the largest river restoration project north of the Everglades and east of the Mississippi, it began when the hydropower company PPL Corporation approached the Service and others to explore an innovative and comprehensive solution to a number of issues surrounding hydropower relicensing, fish passage, and the health of the Penobscot.

The Service's Hydropower Program, with the Federal Energy Regulatory Commission (FERC) and the Trust, pursued a strategy to redesign the use of the river to provide enduring benefits for people and nature. The resulting 2004 settlement with FERC solidified this vision of rebalancing hydropower and sea-run fisheries.

The Service has invested more than $10 million toward the project. Many Service offices and programs have collaborated and leveraged funding to make this large-scale project successful.

- **Tribal Landowner Incentive Program,** managed by the Service for projects restoring at-risk species, granted close to $1 million to the Penobscot Indian Nation to help implement the FERC settlement agreement and conduct critical scientific, political, and community assessments, including sediment, archaeological, and engineering analysis of proper dam removal.
- **Gulf of Maine Coastal Program** provided the project with the first federal funding through the Maine Atlantic Salmon Conservation Fund. The office has provided funding and technical assistance to implement fish passage projects at additional dams and road crossings throughout the Penobscot River watershed. The program helped partners restore access to Blackman Stream, which flows into the Penobscot River between the Veazie and Great Works dams. A nature-like fishway was constructed to restore access for fish. The office provides fisheries expertise and is engaged in the genetic analysis of anadromous alewife and shad in the Penobscot River watershed; these forage and buffer species are critical to Atlantic salmon recovery.
- **National Fish Passage Program,** which provides financial and technical assistance to reconnect aquatic habitats for fish and other aquatic species, has invested more than $3.2

million in funds and will continue to support until final completion of the large landscape project.

- **Maine Ecological Services Field Office** has ensured that measures are taken to avoid, minimize, or compensate for the impacts on fish and wildlife from dams along the Penobscot River. Their biologists helped develop ways to get migratory fish up, over, around, and through remaining barriers on the Penobscot to aid their migratory movements. Staff have assisted the Trust with implementing the two dam removals.
- **Northeast Region Fish Passage Team** and its cadre of hydraulic engineers and hydrologists work in concert with field biologists to enhance fish passage and protection technologies in Maine. A vital component of the Fisheries program, the team's expertise has been directly and successfully applied to the conceptual design of new fishways and engineering evaluations of dam removal plans for the Penobscot River.
- **Maine Fisheries Program Complex** manages staff, budgets and facilities for two federal fish hatcheries and a fisheries resource office focused on the recovery of Atlantic salmon in the Gulf of Maine Distinct Population Segment. The complex provides outreach and education through its visitor center and to 32 schools as part of its Salmon in Schools program.
- **Maine Fishery Resources Office** provides fisheries expertise on a wide variety of issues within the Penobscot River basin, and is engaged in a partnership with the Maine Department of Inland Fisheries and Wildlife and the Penobscot Indian Nation to curtail the spread of exotics within the basin.
- **Craig Brook and Green Lake National Fish Hatcheries** play an integral role in preserving the genetic integrity of the Penobscot Atlantic salmon population. The adult salmon used by Craig Brook as broodstock lead to annual releases of about 2.5 million juvenile Atlantic salmon. More than 90 percent of adult returns to the Penobscot River originate from salmon reared at Green Lake National Fish Hatchery.
- **Wildlife and Sport Fish Restoration and the Gulf of Maine Coastal programs** are providing nearly $3 million to the State of Maine under the National Coastal Wetlands Grant Program, which provides funding for long-term conservation of coastal wetland environments. Service staff provided technical assistance to the Penobscot Indian Nation in applying for the grant.

Relinking the Penobscot's web of wildlife

Maine's largest watershed provides a critical connection between fresh water and the sea. Removing dams and improving structures to pass fish upstream of other dams will reconnect the river and help restore the natural processes and benefits to the river and surrounding areas.

The web of benefits starts by renewed levels of insects needed by forage fish like American eel, sea lamprey, rainbow smelt, shad, alewives, striped bass and tomcod; these, in turn, attract kingfishers, fish-eating ducks, herons, eagles, ospreys, and river otters.

One species particularly critical to the project is endangered Atlantic salmon. Historically, the Penobscot River supported Maine's largest populations of Atlantic salmon, with annual runs prior to 1830 estimated at 50,000 to 70,000 adults. Today, the Penobscot River represents the best chance for restoring wild Atlantic salmon in the United States. The project is an essential step for successful restoration of salmon.

Ten other sea-run fish, such as American eel, sea lamprey, sturgeon, tomcod, smelt and striped bass, will also benefit and again have access to hundreds of miles of their historic spawning and rearing grounds.

Delivering a complete solution

While sustaining water-based environments, the nation's miles of rivers and streams also provide drinking water, fuel the economy, and offer opportunities for recreation and enjoyment. Their health is critical not only to fisheries, but to social, cultural and economic traditions.

The Penobscot River Restoration Project will provide certainty for the future health of the river and its fisheries, as well as security in the business of energy generation. The collaboration has been hailed as a model for other projects involving federal, state, and tribal agencies, conservation groups, industry, and local communities.

The efforts of partners and communities to revive the Penobscot River will bring wide-ranging and long-lasting benefits to Maine. A revived Penobscot means a chance for recovered Atlantic salmon, historic migration and presence of other fish upstream, much-needed jobs in the area, and cultural resources important to the Penobscot Indians. Ultimately, a revived Penobscot will offer Americans the opportunity to again experience the inextricable links with this great river.

The Penobscot River Restoration Project will allow Atlantic salmon and 10 other species of fish to naturally make their annual migrations upstream to the Penobscot Indian Nation. Recovery of Atlantic salmon would renew opportunities for the Nation to exercise its rights for sustenance fishing.

"Today is a day that will be remembered as a most significant event in reuniting our long-lost fisheries resources with their historic homeland. Bringing back these lost relatives continues the restoration of ancient natural cycles of creation in a river we have been connected to for thousands of years and makes us who we are as a people." Chief Kirk Francis, Penobscot Indian Nation

Restoring the Penobscot River is among 100 projects nationwide highlighted as part of President Obama's America's Great Outdoors initiative to establish an agenda for 21st-century conservation and recreation – reconnecting Americans to the outdoors. This project represents one of the best investments in the nation to support a healthy, active population, conserve wildlife and working lands, and create travel, tourism and outdoor-recreation jobs across the country

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